

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1-19 (Cancelled)

20. (Currently Amended) A method of identifying compounds that induce dedifferentiation of mesenchymal lineage committed mammalian cells into multipotent stem cells, said method comprising

(a) ~~contacting a~~ culturing, in a culture medium, the mesenchymal lineage committed mammalian cells with a test compound suspected of inducing dedifferentiation of the mesenchymal lineage committed mammalian cells for a time sufficient to induce dedifferentiation to multipotent stem cells;

(b) removing the test compound and the culture medium;

(c) ~~(b)~~ culturing said cells of step (b) in a first cell differentiation culture medium media, wherein the first cell differentiation culture medium media induces differentiation of the multipotent stem cells of step (b) into a first cell type;

(d) ~~(c)~~ culturing said cells of step (b) in a second cell differentiation culture medium media, wherein the second cell differentiation culture medium media induces differentiation of the multipotent stem cells of step (b) into a second cell type;

(e) ~~(d)~~ determining whether the cells of step (b) have undergone differentiation into the first or second cell type, wherein induction of differentiation of the cells of step (b) into both the first cell type and the second cell type identifies the test compound as a compound that induces dedifferentiation of lineage committed mammalian cells.

21. (Original) The method of claim 20, wherein the first cell culture medium induces osteogenesis and the second culture medium induces adipogenesis,

3                   and wherein the first cell type is an osteoblast and the second cell type is an  
4 adipocyte.

1                   22. (Original) The method of claim 20, wherein the test compound is a member  
2 selected from the group consisting of: substituted purines, pyrimidines, quinazolines, pyrazines,  
3 pyrrolopyrimidine, pyrazolopyrimidine, phthalazines, pyridazines, and quinoxalines.

1                   23. (Original) The method of claim 20, wherein the test compound is a 2,6  
2 disubstituted purine.

1                   24. (Original) The method of claim 21, wherein induction of osteogenesis is  
2 detected by detecting expression of an osteogenesis marker gene.

1                   25. (Original) The method of claim 21, wherein induction of adipogenesis is  
2 detected by detecting expression of an adipogenesis marker gene.

1                   26. (Original) The method of claim 24, wherein the osteogenesis marker gene is  
2 selected from the group consisting of: alkaline phosphatase, collagen type I, osteocalcin, and  
3 osteoponin.

1                   27. (Previously presented) The method of claim 25, wherein the adipogenesis  
2 marker gene is selected from the group consisting of: obese (ob) gene, uncoupling protein  
3 (Ucp) gene, peroxisome proliferator-activated receptor  $\gamma$  (PPAR $\gamma$ ) gene and CCAAT/enhancer-  
4 binding proteins (C/EBPs) genes.

28-34 (Cancelled)